UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF PREVENTION, PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

07/NOV/2005

SUBJECT: **Fipronil** Acute and Chronic Dietary Exposure Assessments for the Use of Fipronil on Rutabaga, Turnip and Corn.

PC Code: 129121
DP Barcodes: D322529, D322527, D316795

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Executive Summary

The purpose of this memorandum is to report the results of a dietary exposure analysis for the insecticide fipronil, [5-amino-1-(2,6-dichloro-4-(trifluoromethyl) phenyl)-4-((1,R,S)-trifluoromethyl)sulfinyl)-1-H-pyrazole-3-carbonitrile] for use on turnips and rutabagas in Oregon and for the renewed registration of its use on corn. The residues of concern and in the tolerance expression for fipronil are fipronil and its 2 metabolites MB45950 (5-amino-1-(2,6-dichloro-4-(trifluoromethyl)phenyl)-4-[(trifluoromethyl)thio]-1H-pyrazole-3-carbonitrile) and MB46136 (5-amino-1-(2,6-dichloro-4-(trifluoromethyl)phenyl)-4-[(trifluoromethyl)sulfonyl]-1H-pyrazole-3-carbonitrile) and photodegradate MB46513 (5-amino-1-(2,6-dichloro-4-(trifluoromethyl)phenyl]-

4-[(1R,S)-(trifluoromethyl)]-1H-pyrazole-3-carbonitrile).

Acute Dietary Exposure Results and Characterization

The Tier 1 acute dietary risk assessment for fipronil shows that for all included commodities, the **acute dietary risk estimates are below the Health Effect Division's (HED's) level of concern (i.e. <100% acute population adjusted doses (aPAD))** for the general U.S. population (8.9% of the aPAD) and all population subgroups. The acute dietary risk estimate for the 95th percentile of the highest exposed population subgroup, children 1-2 years old, is 24% of the aPAD.

Chronic Dietary Exposure Results and Characterization

The Tier 1 chronic dietary risk assessment for fipronil showed that dietary risk estimates **exceeded HED's level of concern (i.e. <100% chronic population adjusted doses (cPAD))**; therefore, a partially refined chronic dietary assessment was performed with use of anticipated residues (ARs) from field trial data, processing factors where applicable, and %CT information from the previous risk assessment (D248827, S. Levy, 02/20/2001). The refined, Tier 2 chronic dietary risk assessment for fipronil shows that for all included commodities, the chronic dietary risk estimates are **below HED's level of concern (>100% cPAD)** for the general U.S. population (19% of the cPAD) and all population subgroups. The chronic dietary risk estimate for the highest reported exposed population subgroup, all infants (< 1 year), is 39% of the cPAD.

Cancer

The HED Cancer Peer Review Committee (document dated 7/18/97) classified fipronil as a Group C chemical (possible human carcinogen). The HIARC determined that cancer dietary risk concerns due to long-term consumption of fipronil residues are adequately addressed by the chronic dietary exposure analysis using the RfD; therefore, a separate cancer dietary exposure analysis was not performed.

Water Contribution

The Environmental Fate and Effects Division (EFED) provided environmental fate and a comparative drinking water assessments for the proposed and registered uses of fipronil assuming 100% of fipronil and its metabolites are available for degradation, runoff, and leaching. The drinking water assessment was based on screening level models because available monitoring data represent cancelled fipronil uses (i.e., rice) or are not targeted to all fipronil use areas (D319940, Hetrick, in process). This dietary risk analysis incorporated water concentration estimates from the in-furrow corn scenario for both the acute and chronic dietary analysis. The acute water concentration, 0.001036 ppm, was determined by adding the 1 in 10 year peak concentrations for fipronil and its metabolites, while the chronic water concentration, 0.000983, was determined by adding the 1 in 10 year average concentrations.

I. Introduction

Dietary Exposure

Dietary risk assessment incorporates both exposure and toxicity of a given pesticide. For acute and chronic assessments, the risk is expressed as a percentage of a maximum acceptable dose. This is the population adjusted dose (PAD), which HED has concluded will result in no unreasonable adverse health effects. The PAD is the Reference Dose (RfD) divided by the special FQPA Safety Factor. Dietary risk is expressed as a percentage of the PAD. For acute and non-cancer chronic exposures, HED is concerned when estimated dietary risk exceeds 100% of the PAD. References which discuss the acute and chronic risk assessments in more detail are available on the EPA/pesticides web site: "Available Information on Assessing Exposure from Pesticides, A User's Guide", 6/21/2000, web link: http://www.epa.gov/fedrgstr/EPA-PEST/2000/July/Day-12/6061.pdf ; or see SOP 99.6 (8/20/99).

The most recent dietary risk assessment for fipronil was conducted by Sarah Levy (D248827, 02/20/2001) for its use in/on cotton.

II. Residue Information

In this analysis the acute and chronic dietary exposure and risk estimates resulting from food intake were determined for the general U.S. population and various population subgroups resulting from the addition of turnip and rutabaga to the commodity residue list for fipronil, as well as the renewed registration for its use on corn.

Tolerances for residues of fipronil (+ its 2 metabolites and 1 photodegradate) have been established (40 CFR. §180.517(a)) for the following commodities: rice grain (0.04 ppm); rice straw (0.10 ppm); corn, field, grain (0.02 ppm); corn, field, stover (0.30 ppm); corn, field, forage (0.15 ppm); eggs (0.03 ppm); fat of cattle, goat, horse, and sheep (0.40 ppm); hog fat (0.04 ppm); hog liver (0.02 ppm); hog meat (0.01 ppm); hog meat byproducts (except liver) (0.01 ppm); liver of cattle, goat, horse, and sheep (0.10 ppm); meat byproducts of cattle, goat, horse, and sheep (except liver) (0.04 ppm); meat of cattle, goat, horse, and sheep (0.04 ppm); milk, fat (reflecting 0.05 ppm in whole milk) (1.50 ppm); poultry fat (0.05 ppm); poultry meat (0.02 ppm); and poultry meat byproducts (0.02 ppm).

The DEEM-FCID™ acute analysis was performed assuming tolerance level residues and that 100% of each crop was treated for turnip and rutabaga at 1.0 ppm, corn, field, grain at 0.02 ppm, wheat, grain at 0.005 ppm and a water (acute) modeled concentration of 0.001036 ppm. Default processing factors were used for all commodities.

The DEEM-FCID™ chronic analysis was performed using ARs from field trial data, processing factors, %CT information from the last fipronil dietary analysis (D248827, Levy, 02/20/2001),

residues for turnip and rutabaga at 1.0 ppm, corn, field, grain at 0.02 ppm, wheat, grain at 0.005 ppm and a water (chronic) modeled concentration of 0.000983 ppm.

The use of fipronil in/on cotton has been withdrawn by the registrant and so for the purpose of this dietary analysis the tolerance for cotton has been removed. There are no proposed uses for fipronil on wheat though tolerances are proposed due to inadvertent residues resulting from uptake by rotational crops. Processing data for wheat RACs are not available at this time; therefore the wheat, grain tolerance (0.005 ppm) was used for all wheat commodities in both the acute and chronic analyses. HED also determined that existing tolerances on livestock should been maintained. The use of fipronil on rice is an overseas use only yet tolerances were included into both the acute and chronic dietary analyses.

The following tolerances are requested as part of the pending Section 18 and Section 3 petitions:

Commodity	Proposed Tolerance
Turnip	1 .0 ppm
Rutabaga	1.0 ppm
Corn, field, grain	0.02 ppm

This analysis incorporates all current, pending, and proposed tolerances for fipronil as of October 30, 2005.

III. DEEM-FCID™ Program and Consumption Information

A fipronil acute and chronic dietary exposure assessment was conducted using the Dietary Exposure Evaluation Model software with the Food Commodity Intake Database (DEEM-FCID™, Version 2.03), which incorporates consumption data from USDA's Continuing Surveys of Food Intakes by Individuals (CSFII), 1994-1996 and 1998. The 1994-96, 98 data are based on the reported consumption of more than 20,000 individuals over two non-consecutive survey days. Foods "as consumed" (e.g., apple pie) are linked to EPA-defined food commodities (e.g. apples, peeled fruit - cooked; fresh or N/S; baked; or wheat flour - cooked; fresh or N/S, baked) using publicly available recipe translation files developed jointly by USDA/ARS and EPA. Consumption data are averaged for the entire U.S. population and within population subgroups for chronic exposure assessment, but are retained as individual consumption events for acute exposure assessment.

For acute exposure assessments, individual one-day food consumption data are used on an individual-by-individual basis. The reported consumption amounts of each food item can be multiplied by a residue point estimate and summed to obtain a total daily pesticide exposure for a deterministic (Tier 1 or Tier 2) exposure assessment, or "matched" in multiple random pairings

with residue values and then summed in a probabilistic (Tier 3/4) assessment. The resulting distribution of exposures is expressed as a percentage of the aPAD on both a user (i.e., those who reported eating relevant commodities/food forms) and a per-capita (i.e., those who reported eating the relevant commodities as well as those who did not) basis. In accordance with HED policy, per capita exposure and risk are reported for all tiers of analysis. However, for tiers 1 and 2, significant differences in user vs. per capita exposure and risk are identified and noted in the risk assessment.

For chronic exposure and risk assessment, an estimate of the residue level in each food or food-form (e.g., orange or orange juice) on the food commodity residue list is multiplied by the average daily consumption estimate for that food/food form. The resulting residue consumption estimate for each food/food form is summed with the residue consumption estimates for all other food/food forms on the commodity residue list to arrive at the total average estimated exposure. Exposure is expressed in mg/kg body weight/day and as a percent of the cPAD. This procedure is performed for each population subgroup.

IV. Toxicological Information

Table 1. Summary of Toxicology Endpoint Selections for Fipronil [a]

Exposure Scenario	Dose Used in Risk Assessment, UF	Special FQPA SF* and Level of Concern for Risk Assessment	Study and Toxicological Effects
Acute Dietary all populations including infants and children	NOAEL=2.5 mg/kg UF = 100 Acute RfD = 0.025 mg/kg/day	FQPA SF = 1x **aPAD** = acute RfD / FQPA SF = 0.025 mg/kg/day	Acute neurotoxicity LOAEL = 7.0 mg/kg based on decreased hind leg splay in males at 7 hours.
Chronic Dietary all populations	NOAEL= 0.019 mg/kg/day UF = 100 Chronic RfD = 0.0002 mg/kg/day	FQPA SF = 1x **cPAD** = chronic RfD / FQPA SF **0.0002 = mg/kg/day**	Chronic/onco rat study LOAEL = 0.059 mg/kg/day based on increased incidence of seizures and death, alterations in clinical chemistry (protein) and TSH, T4.
Cancer (oral, dermal, inhalation)	Group C - possible human carcinogen	Use chronic RfD to estimate human risk	Increases in thyroid follicular cell tumors with fipronil (male/female)

[a] UF = uncertainty factor; FQPA SF = FQPA safety factor; NOAEL = no observed adverse effect level; LOAEL = lowest observed adverse effect level; PAD = population adjusted dose (a = acute, c = chronic); RfD = reference dose.

Based on the hazard and exposure data, the HED Food Quality Protection Act (FQPA) Safety Factor Committee (SFC) determined that the additional **10x factor** for enhanced sensitivity to infants and children (as required by FQPA) should be **removed** (i.e., reduced to 1x) for fipronil

and its photodegradate, MB46513 (FQPA Document, HED Doc. No. 012619, 5/12/98). Removing the 10x FQPA SF resulted in the aPAD of 0.025 mg/kg for acute dietary risk assessment and cPAD of 0.0002 mg/kg/day for chronic dietary risk assessment. A PAD is a reference dose (RfD) modified by the FQPA SF (RfD/FQPA SF = PAD).

V. Results/Discussion & Conclusions

As stated above, for acute and chronic assessments, HED is concerned when dietary risk exceeds 100% of the PAD. The DEEM-FCID™ analyses estimate the dietary exposure for the U.S. population and various population subgroups for both the acute and chronic dietary exposures. Results are reported in Table 2 for acute dietary exposures for the general U.S. Population, all infants (<1 year old), children 1-2, children 3-5, children 6-12, youth 13-19, females 13-49, adults 20-49, and adults 50+ years, highlighting the results for the highest exposure group, children 1-2 years old (< 24% aPAD), at the 95th percentile. Results are reported in Table 3 for chronic dietary exposures for the U.S. population and the same 8 population subgroups noted above, highlighting the results for the highest exposure group, all infants (<1 year) (< 39% cPAD). A full listing of the residue information used in these analyses is given in Attachments 1 through 4.

Results of Acute Dietary Exposure Analysis

The Tier 1 acute dietary risk assessment results are reported at the 95th, 99th and 99.9th percentiles. The exposure assessment incorporated 100% CT and tolerance level residue assumptions. The result for the highest exposure group, children 1-2 years old (24% aPAD), at the 95th percentile is highlighted in Table 2.

Table 2. Results of Acute Dietary Exposure Analysis

Population Subgroup	aPAD (mg/kg/day)	95th Percentile		99th Percentile		99.9th Percentile	
		Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD
General U.S. Population	0.025	0.002239	9.0	0.004096	16	0.007220	29
All Infants	0.025	0.003059	12	0.007992	32	0.010881	44
Children 1-2 years old	0.025	0.006043	**24**	0.008146	33	0.012145	49
Children 3-5 years old	0.025	0.004275	17	0.005927	24	0.010183	41
Children 6-12 years old	0.025	0.002764	11	0.003872	15	0.006712	27

Table 2. Results of Acute Dietary Exposure Analysis

Population Subgroup	aPAD (mg/kg/day)	95th Percentile		99th Percentile		99.9th Percentile	
		Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD
Youth 13-19years old	0.025	0.001655	6.6	0.002850	11	0.005362	22
Adults 20-49 years old	0.025	0.001258	5.0	0.002279	9.1	0.003380	14
Females 13-49 years old	0.025	0.001209	4.8	0.001860	7.4	0.003416	14
Adults 50+ years old	0.025	0.001027	4.1	0.001843	7.4	0.003909	16

Results of Chronic Dietary Exposure Analysis

The Tier 2 chronic dietary risk assessment was conducted for fipronil food uses. A partially refined analysis was performed using ARs, processing factors where applicable, and %CT information. For all commodities, the chronic risk estimates are below the Agency's level of concern for the general U.S. population (19% of the cPAD) and all infants (<1 year old), children 1-2, children 3-5, children 6-12, youth 13-19, females 13-49, adults 20-49, and adults 50+ years. The chronic dietary exposure estimate for the highest exposed population subgroup, all infants (< 1 year old), is 39% of the cPAD.

Table 3. Results of Chronic Dietary Exposure Analysis

Population Subgroup	cPAD (mg/kg/day)	Exposure (mg/kg/day)	% cPAD
General U.S. Population	0.0002	0.000038	19
All Infants (< 1 year old)	0.0002	0.000078	39
Children 1-2 years old	0.0002	0.000064	32
Children 3-5 years old	0.0002	0.000058	29
Children 6-12 years old	0.0002	0.000035	18
Youth 13-19 years old	0.0002	0.000025	13
Adults 20-49 years old	0.0002	0.000031	16
Females 13-49 years old	0.0002	0.000030	15

Table 3. Results of Chronic Dietary Exposure Analysis			
Population Subgroup	**cPAD (mg/kg/day)**	**Exposure (mg/kg/day)**	**% cPAD**
Adults 50+ years old	0.0002	0.000047	24

VI. List of Attachments

Attachment 1- Results of Tier 1 Acute Dietary Analysis of Fipronil
Attachment 2- Residue Inputs for Tier 1 Acute Dietary Assessment of Fipronil
Attachment 3- Results of Tier 2 Chronic Dietary Analysis for Fipronil
Attachment 4- Residue Inputs for Tier 2 Chronic Dietary Assessment of Fipronil

Attachment 1- Results of Tier 1 Acute Dietary Analysis of Fipronil

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U.S. Environmental Protection Agency                                    Ver. 2.02
DEEM-FCID ACUTE Analysis for FIPRONIL                                 (1994-98 data)
Residue file: 129121a.R98                          Adjustment factor #2 NOT used.
Analysis Date: 10-24-2005/11:32:20    Residue file dated: 10-24-2005/11:31:41/8
NOEL (Acute) =   2.500000 mg/kg body-wt/day
Daily totals for food and foodform consumption used.
Run Comment: "THIS R98 FILE WAS GENERATED RS7toR98 VERSION 1.1.2. COMMENT FROM
 THE SOURCE RS7 FILE: Acute - Tier 2"
================================================================================

Summary calculations (per capita):
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	95th Percentile			99th Percentile			99.9th Percentile	
	Exposure	% aRfD	MOE	Exposure	% aRfD	MOE	Exposure	% aRfD	MOE
U.S. Population:									
	0.002239	8.96	1116	0.004096	16.38	610	0.007220	28.88	346
All infants:									
	0.003059	12.23	817	0.007992	31.97	312	0.010881	43.53	229
Children 1-2 yrs:									
	0.006043	24.17	413	0.008146	32.58	306	0.012145	48.58	205
Children 3-5 yrs:									
	0.004275	17.10	584	0.005927	23.71	421	0.010183	40.73	245
Children 6-12 yrs:									
	0.002764	11.06	904	0.003872	15.49	645	0.006712	26.85	372
Youth 13-19 yrs:									
	0.001655	6.62	1510	0.002850	11.40	877	0.005362	21.45	466
Adults 20-49 yrs:									
	0.001258	5.03	1986	0.002279	9.11	1097	0.003380	13.52	739
Adults 50+ yrs:									
	0.001027	4.11	2434	0.001843	7.37	1356	0.003909	15.63	639
Females 13-49 yrs:									
	0.001209	4.84	2067	0.001860	7.44	1344	0.003416	13.66	731

Attachment 2- Residue Inputs for Tier 1 Acute Dietary Assessment of Fipronil

U.S. Environmental Protection Agency Ver. 2.02
DEEM-FCID Acute analysis for FIPRONIL
Residue file name: C:\My Documents\Breann's Work\ARIA\Fipronil\CORN USES ONLY\129121a.R98
Analysis Date 10-24-2005 Residue file dated: 10-24-2005/11:31:41/8
Reference dose: aRfD = 0.025 mg/kg bw/day NOEL = 2.5 mg/kg bw/day
Comment: THIS R98 FILE WAS GENERATED RS7toR98 VERSION 1.1.2. COMMENT FROM THE SOURCE RS7 FILE: Acute - Tier 2

EPA Code	Crop Grp	Food Name	Def Res (ppm)	Adj.Factors #1	#2
21000440	M	Beef, meat	0.040000	1.000	1.000
21000441	M	Beef, meat-babyfood	0.040000	1.000	1.000
21000450	M	Beef, meat, dried	0.040000	1.920	1.000
21000460	M	Beef, meat byproducts	0.040000	1.000	1.000
21000461	M	Beef, meat byproducts-babyfood	0.040000	1.000	1.000
21000470	M	Beef, fat	0.400000	1.000	1.000
21000471	M	Beef,fat-babyfood	0.400000	1.000	1.000
21000480	M	Beef, kidney	0.040000	1.000	1.000
21000490	M	Beef, liver	0.100000	1.000	1.000
21000491	M	Beef, liver-babyfood	0.100000	1.000	1.000
40000930	P	Chicken, meat	0.020000	1.000	1.000
40000931	P	Chicken, meat-babyfood	0.020000	1.000	1.000
40000940	P	Chicken, liver	0.020000	1.000	1.000
40000950	P	Chicken, meat byproducts	0.020000	1.000	1.000
40000951	P	Chicken, meat byproducts-babyfoo	0.020000	1.000	1.000
40000960	P	Chicken, fat	0.050000	1.000	1.000
40000961	P	Chicken, fat-babyfood	0.050000	1.000	1.000
40000970	P	Chicken, skin	0.020000	1.000	1.000
40000971	P	Chicken, skin-babyfood	0.020000	1.000	1.000
15001200	15	Corn, field, flour	0.020000	1.000	1.000
15001201	15	Corn, field, flour-babyfood	0.020000	1.000	1.000
15001210	15	Corn, field, meal	0.020000	1.000	1.000
15001220	15	Corn, field, bran	0.020000	1.000	1.000
15001230	15	Corn, field, starch	0.020000	1.000	1.000
15001231	15	Corn, field, starch-babyfood	0.020000	1.000	1.000
15001240	15	Corn, field, syrup	0.020000	1.500	1.000
15001241	15	Corn, field, syrup-babyfood	0.020000	1.500	1.000
15001250	15	Corn, field, oil	0.020000	1.000	1.000
15001251	15	Corn, field, oil-babyfood	0.020000	1.000	1.000
70001450	P	Egg, whole	0.030000	1.000	1.000
70001451	P	Egg, whole-babyfood	0.030000	1.000	1.000
70001460	P	Egg, white	0.030000	1.000	1.000
70001470	P	Egg, yolk	0.030000	1.000	1.000
70001471	P	Egg, yolk-babyfood	0.030000	1.000	1.000
23001690	M	Goat, meat	0.040000	1.000	1.000
23001700	M	Goat, meat byproducts	0.040000	1.000	1.000
23001710	M	Goat, fat	0.400000	1.000	1.000
23001720	M	Goat, kidney	0.040000	1.000	1.000
23001730	M	Goat, liver	0.100000	1.000	1.000
27002220	D	Milk, fat	1.500000	1.000	1.000
27002221	D	Milk, fat - baby food/infant for	1.500000	1.000	1.000
25002900	M	Pork, meat	0.010000	1.000	1.000
25002901	M	Pork, meat-babyfood	0.010000	1.000	1.000
25002910	M	Pork, skin	0.010000	1.000	1.000
25002920	M	Pork, meat byproducts	0.010000	1.000	1.000
25002921	M	Pork, meat byproducts-babyfood	0.010000	1.000	1.000
25002930	M	Pork, fat	0.040000	1.000	1.000

25002931	M	Pork, fat-babyfood	0.040000	1.000	1.000
25002940	M	Pork, kidney	0.010000	1.000	1.000
25002950	M	Pork, liver	0.020000	1.000	1.000
60003010	P	Poultry, other, meat	0.020000	1.000	1.000
60003020	P	Poultry, other, liver	0.020000	1.000	1.000
60003030	P	Poultry, other, meat byproducts	0.020000	1.000	1.000
60003040	P	Poultry, other, fat	0.050000	1.000	1.000
60003050	P	Poultry, other, skin	0.020000	1.000	1.000
15003230	15	Rice, white	0.040000	1.000	1.000
15003231	15	Rice, white-babyfood	0.040000	1.000	1.000
15003240	15	Rice, brown	0.040000	1.000	1.000
15003241	15	Rice, brown-babyfood	0.040000	1.000	1.000
15003250	15	Rice, flour	0.040000	1.000	1.000
15003251	15	Rice, flour-babyfood	0.040000	1.000	1.000
15003260	15	Rice, bran	0.040000	1.000	1.000
15003261	15	Rice, bran-babyfood	0.040000	1.000	1.000
01013270	1AB	Rutabaga	1.000000	1.000	1.000
26003390	M	Sheep, meat	0.040000	1.000	1.000
26003391	M	Sheep, meat-babyfood	0.040000	1.000	1.000
26003400	M	Sheep, meat byproducts	0.040000	1.000	1.000
26003410	M	Sheep, fat	0.400000	1.000	1.000
26003411	M	Sheep, fat-babyfood	0.400000	1.000	1.000
26003420	M	Sheep, kidney	0.040000	1.000	1.000
26003430	M	Sheep, liver	0.100000	1.000	1.000
15003810	15	Triticale, flour	0.005000	1.000	1.000
50003820	P	Turkey, meat	0.020000	1.000	1.000
50003821	P	Turkey, meat-babyfood	0.020000	1.000	1.000
50003830	P	Turkey, liver	0.020000	1.000	1.000
50003840	P	Turkey, meat byproducts	0.020000	1.000	1.000
50003841	P	Turkey, meat byproducts-babyfood	0.020000	1.000	1.000
50003850	P	Turkey, fat	0.050000	1.000	1.000
50003851	P	Turkey, fat-babyfood	0.050000	1.000	1.000
50003860	P	Turkey, skin	0.020000	1.000	1.000
50003861	P	Turkey, skin-babyfood	0.020000	1.000	1.000
01013880	1AB	Turnip, roots	1.000000	1.000	1.000
05023890	5B	Turnip, greens	1.000000	1.000	1.000
86010000	O	Water, direct, all sources	0.001036	1.000	1.000
86020000	O	Water, indirect, all sources	0.001036	1.000	1.000
15004010	15	Wheat, grain	0.005000	1.000	1.000
15004011	15	Wheat, grain-babyfood	0.005000	1.000	1.000
15004020	15	Wheat, flour	0.005000	1.000	1.000
15004021	15	Wheat, flour-babyfood	0.005000	1.000	1.000
15004030	15	Wheat, germ	0.005000	1.000	1.000
15004040	15	Wheat, bran	0.005000	1.000	1.000

Attachment 3- Results of Tier 2 Chronic Dietary Analysis for Fipronil

U.S. Environmental Protection Agency Ver. 2.00
DEEM-FCID Chronic analysis for FIPRONIL (1994-98 data)
Residue file name: C:\My Documents\Breann's Work\ARIA\Fipronil\CORN USES ONLY\129121C.R98
Adjustment factor #2 used.
Analysis Date 10-24-2005/10:25:17 Residue file dated: 10-24-2005/10:24:56/8
Reference dose (RfD, Chronic) = .0002 mg/kg bw/day
COMMENT 1: THIS R98 FILE WAS GENERATED RS7toR98 VERSION 1.1.2. COMMENT FROM THE SOURCE RS7 FILE: Acute - Tier 2

Total exposure by population subgroup

Population Subgroup	Total Exposure mg/kg body wt/day	Total Exposure Percent of Rfd
U.S. Population (total)	0.000038	19.1%
U.S. Population (spring season)	0.000035	17.3%
U.S. Population (summer season)	0.000037	18.4%
U.S. Population (autumn season)	0.000043	21.4%
U.S. Population (winter season)	0.000038	19.2%
Northeast region	0.000032	16.0%
Midwest region	0.000035	17.5%
Southern region	0.000047	23.4%
Western region	0.000034	16.9%
Hispanics	0.000034	17.0%
Non-hispanic whites	0.000033	16.7%
Non-hispanic blacks	0.000069	34.6%
Non-hisp/non-white/non-black	0.000040	20.2%
All infants (< 1 year)	0.000078	39.1%
Nursing infants	0.000029	14.4%
Non-nursing infants	0.000097	48.5%
Children 1-6 yrs	0.000058	29.2%
Children 7-12 yrs	0.000033	16.4%
Females 13-19 (not preg or nursing)	0.000023	11.5%
Females 20+ (not preg or nursing)	0.000039	19.4%
Females 13-50 yrs	0.000031	15.3%
Females 13+ (preg/not nursing)	0.000027	13.7%
Females 13+ (nursing)	0.000035	17.6%
Males 13-19 yrs	0.000028	13.9%
Males 20+ yrs	0.000036	17.8%
Seniors 55+	0.000052	25.9%
Children 1-2 yrs	0.000064	31.8%
Children 3-5 yrs	0.000058	29.0%
Children 6-12 yrs	0.000035	17.7%
Youth 13-19 yrs	0.000025	12.7%
Adults 20-49 yrs	0.000031	15.7%
Adults 50+ yrs	0.000047	23.7%
Females 13-49 yrs	0.000030	14.9%

Attachment 4- Residue Inputs for Tier 2 Chronic Dietary Assessment of Fipronil

U.S. Environmental Protection Agency Ver. 2.00
DEEM-FCID Chronic analysis for FIPRONIL 1994-98 data
Residue file: C:\My Documents\Breann's Work\ARIA\Fipronil\CORN USES ONLY\129121c.R98
Adjust. #2 used
Analysis Date 10-24-2005 Residue file dated: 10-24-2005/10:24:56/8
Reference dose (RfD) = 0.0002 mg/kg bw/day
Comment:THIS R98 FILE WAS GENERATED RS7toR98 VERSION 1.1.2. COMMENT FROM THE SOURCE RS7 FILE: Acute - Tier 2

Food Crop EPA Code	Grp	Food Name	Residue (ppm)	Adj.Factors #1	#2
21000440	M	Beef, meat	0.000940	1.000	1.000
21000441	M	Beef, meat-babyfood	0.000940	1.000	1.000
21000450	M	Beef, meat, dried	0.000940	1.920	1.000
21000460	M	Beef, meat byproducts	0.006000	1.000	1.000
21000461	M	Beef, meat byproducts-babyfood	0.000600	1.000	1.000
21000470	M	Beef, fat	0.008700	1.000	1.000
21000471	M	Beef,fat-babyfood	0.008700	1.000	1.000
21000480	M	Beef, kidney	0.000600	1.000	1.000
21000490	M	Beef, liver	0.002500	1.000	1.000
21000491	M	Beef, liver-babyfood	0.002500	1.000	1.000
40000930	P	Chicken, meat	0.000180	1.000	1.000
40000931	P	Chicken, meat-babyfood	0.000180	1.000	1.000
40000940	P	Chicken, liver	0.000840	1.000	1.000
40000950	P	Chicken, meat byproducts	0.000840	1.000	1.000
40000951	P	Chicken, meat byproducts-babyfoo	0.000840	1.000	1.000
40000960	P	Chicken, fat	0.002300	1.000	1.000
40000961	P	Chicken, fat-babyfood	0.002300	1.000	1.000
40000970	P	Chicken, skin	0.002300	1.000	1.000
40000971	P	Chicken, skin-babyfood	0.002300	1.000	1.000
15001200	15	Corn, field, flour	0.015000	1.000	0.070
15001201	15	Corn, field, flour-babyfood	0.015000	1.000	0.070
15001210	15	Corn, field, meal	0.015000	1.000	0.070
15001220	15	Corn, field, bran	0.015000	1.000	0.070
15001230	15	Corn, field, starch	0.015000	1.000	0.070
15001231	15	Corn, field, starch-babyfood	0.015000	1.000	0.070
15001240	15	Corn, field, syrup	0.015000	1.500	0.070
15001241	15	Corn, field, syrup-babyfood	0.015000	1.500	0.070
15001250	15	Corn, field, oil	0.015000	1.000	0.070
15001251	15	Corn, field, oil-babyfood	0.015000	1.000	0.070
70001450	P	Egg, whole	0.001300	1.000	1.000
70001451	P	Egg, whole-babyfood	0.001300	1.000	1.000
70001460	P	Egg, white	0.001300	1.000	1.000
70001461	P	Egg, white (solids)-babyfood	0.001300	1.000	1.000
70001470	P	Egg, yolk	0.001300	1.000	1.000
70001471	P	Egg, yolk-babyfood	0.001300	1.000	1.000
23001690	M	Goat, meat	0.000940	1.000	1.000
23001700	M	Goat, meat byproducts	0.000940	1.000	1.000
23001710	M	Goat, fat	0.008700	1.000	1.000
23001720	M	Goat, kidney	0.000600	1.000	1.000
23001730	M	Goat, liver	0.002500	1.000	1.000
27002220	D	Milk, fat	0.002900	1.000	1.000
27002221	D	Milk, fat - baby food/infant for	0.002900	1.000	1.000
25002900	M	Pork, meat	0.000310	1.000	1.000
25002901	M	Pork, meat-babyfood	0.000310	1.000	1.000
25002910	M	Pork, skin	0.002900	1.000	1.000
25002920	M	Pork, meat byproducts	0.000200	1.000	1.000
25002921	M	Pork, meat byproducts-babyfood	0.000200	1.000	1.000

25002930	M	Pork, fat	0.002900	1.000	1.000
25002931	M	Pork, fat-babyfood	0.002900	1.000	1.000
25002940	M	Pork, kidney	0.000200	1.000	1.000
25002950	M	Pork, liver	0.000830	1.000	1.000
60003010	P	Poultry, other, meat	0.000180	1.000	1.000
60003020	P	Poultry, other, liver	0.000840	1.000	1.000
60003030	P	Poultry, other, meat byproducts	0.002300	1.000	1.000
60003040	P	Poultry, other, fat	0.002300	1.000	1.000
60003050	P	Poultry, other, skin	0.002300	1.000	1.000
15003230	15	Rice, white	0.020000	1.000	0.210
15003231	15	Rice, white-babyfood	0.020000	1.000	0.210
15003240	15	Rice, brown	0.020000	1.000	0.210
15003241	15	Rice, brown-babyfood	0.020000	1.000	0.210
15003250	15	Rice, flour	0.020000	1.000	0.210
15003251	15	Rice, flour-babyfood	0.020000	1.000	0.210
15003260	15	Rice, bran	0.020000	1.000	0.210
15003261	15	Rice, bran-babyfood	0.020000	1.000	0.210
01013270	1AB	Rutabaga	1.000000	1.000	1.000
26003390	M	Sheep, meat	0.000940	1.000	1.000
26003391	M	Sheep, meat-babyfood	0.000940	1.000	1.000
26003400	M	Sheep, meat byproducts	0.000600	1.000	1.000
26003410	M	Sheep, fat	0.008700	1.000	1.000
26003411	M	Sheep, fat-babyfood	0.008700	1.000	1.000
26003420	M	Sheep, kidney	0.006000	1.000	1.000
26003430	M	Sheep, liver	0.002500	1.000	1.000
15003810	15	Triticale, flour	0.005000	1.000	1.000
15003811	15	Triticale, flour-babyfood	0.005000	1.000	1.000
50003820	P	Turkey, meat	0.000180	1.000	1.000
50003821	P	Turkey, meat-babyfood	0.000180	1.000	1.000
50003830	P	Turkey, liver	0.000840	1.000	1.000
50003831	P	Turkey, liver-babyfood	0.000840	1.000	1.000
50003840	P	Turkey, meat byproducts	0.000840	1.000	1.000
50003841	P	Turkey, meat byproducts-babyfood	0.000840	1.000	1.000
50003850	P	Turkey, fat	0.002300	1.000	1.000
50003851	P	Turkey, fat-babyfood	0.002300	1.000	1.000
50003860	P	Turkey, skin	0.002300	1.000	1.000
50003861	P	Turkey, skin-babyfood	0.002300	1.000	1.000
01013880	1AB	Turnip, roots	1.000000	1.000	1.000
05023890	5B	Turnip, greens	1.000000	1.000	1.000
86010000	O	Water, direct, all sources	0.000983	1.000	1.000
86020000	O	Water, indirect, all sources	0.000983	1.000	1.000
15004010	15	Wheat, grain	0.005000	1.000	0.010
15004011	15	Wheat, grain-babyfood	0.005000	1.000	0.010
15004020	15	Wheat, flour	0.005000	1.000	0.010
15004021	15	Wheat, flour-babyfood	0.005000	1.000	0.010
15004030	15	Wheat, germ	0.005000	1.000	0.010
15004040	15	Wheat, bran	0.005000	1.000	0.010